

FR - Notice de fonctionnement
EN - User's manual
DE - Bedienungsanleitung
IT - Manuale d'uso
ES - Manual de instrucciones

 **CHAUVIN
ARNOUX**

CA 5003



Multimètre
Multimeter
Multimeter
Multimetro
Multimetro

Measure up



Thank you for purchasing a **CA 5003 Multimeter**.

To get the best service from this instrument:

- **read** this user's manual carefully,
- **respect** the safety precautions detailed.



WARNING, DANGER ! The operator should refer to this user's manual whenever this danger symbol appears.



Equipment protected by double insulation.



The CE marking indicates compliance with the European Low Voltage Directive (2014/35/EU), Electromagnetic Compatibility Directive (2014/30/EU), Radio Equipment Directive (2014/53/EU), and Restriction of Hazardous Substances Directive (RoHS, 2011/65/EU and 2015/863/EU).



The rubbish bin with a line through it indicates that, in the European Union, the product must undergo selective disposal in compliance with Directive WEE 2012/19/EU. This equipment must not be treated as household waste.

SAFETY PRECAUTIONS






- Never use on networks at a voltage above 600 V in relation to the earth. This multimeter of overvoltage category III, satisfies the severe requirements of reliability and availability corresponding to industrial and domestic permanent installations (c.f. IEC 664-1).
- Use indoors in environments of degree of pollution at most equal to 2 (c.f. IEC 664-1), of temperature from -10 to +55°C and of relative humidity less than 90%.
- Respect the value and the type of fuses or there is a risk of damage to the instrument and cancellation of the warranty.
 - Fuse 1,6 A HPC (6,3 x 32 mm - 500 V - 10 kA)
 - Fuse 10 A HPC (10 x 38 mm - 600 V - 10 kA)
- Use accessories in conformity with safety standards (EN 61010-031) of minimum voltage 600 V and overvoltage category III.
- Before any measurement, check the leads and the switch are in the correct position. When the order of magnitude of a measurement is not known, place the selector switch on the highest range then lower progressively, if necessary, to the appropriate range: the reading must be made, preferably, in the upper 2/3 of the scale.
- Never measure resistances on a live circuit. If zero reset is not possible, replace the battery.
- During current measurements (without current clamp), switch off the power supply of the circuit before connecting or disconnecting your multimeter.
- To open the battery compartment, the leads must be disconnected.
- Never connect to the circuit to be measured if the battery compartment is not correctly closed.

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1. DESCRIPTION

The CA 5003 multimeter is designed for the daily needs of professionals in electricity. It has the following functions:

- Voltmeter: voltage measurements (V  and )
- Ammeter: current measurements (A  and )
- Ohmmeter: resistance measurements (Ω) with automatic adjusting
- Continuity sound test []

① SAFETY TERMINALS

Ø 4 mm safety terminals

- **COM** : common, terminal that receives the black lead
- **V Ω** : for voltages and resistances
- **15 A** : for the 15 A range
- **μ A** : for the μ A, mA and 1,5 A ranges

② 6 SCALES DIAL


- 2 black, with parallax mirror, for VDC and AC
- 1 green for Ω
- 1 black for A DC
- 1 red for A AC
- 1 red for dB

③ FUSES CONTROL LIGHT

1,6 A and 16 A fuses on current or voltage measurement.

Change the fuses if light on (for $V \geq 110$ V)

④ VOLTAGE PRESENCE LIGHT ($V > 15$ V) ON OHMMETER

 If the «Voltest» light comes on, unplug the leads and cut off the voltage before making the resistance measurement.

⑤ FUNCTIONS SELECTION SWITCH

2. REFERENCE CONDITIONS

Temperature:	22°C \pm 2°K
Humidity:	45 % RH \pm 5 %
Position:	horizontal \pm 2°
Frequency:	45 Hz to 65 Hz
Intrinsic error:	0,3 %


Before all measurement, be sure the needle is on zero. Otherwise, turn the mechanical zero adjusting screw situated under the battery door in order to do coincide the needle with the zero of upper black scale (0.100).


Be sure the rotary switch is correctly positioned. When the order of magnitude is not known, place the rotary switch on the highest range then progressively lower to appropriate range : the reading must be made, preferably, in the upper 2/3 of the scale.

3. SPECIFICATIONS

DC VOLTAGES

- Connect the leads to the multimeter and connect in parallel to the circuit to be tested.
- When the order of magnitude is not known, place the switch on the highest range then progressively lower to the appropriate range.
- To get the voltage in V, multiply the value read on the appropriate scale by the reading coefficient shown in the table.

V 	100 mV ⁽¹⁾	1 V	3 V	10 V	30 V	100 V	300 V	1000 V
Scale	100	100	30	100	30	100	30	100
Reading coefficient	x1 ⁽²⁾	x0.01	x0.1	x0.1	x1	x1	x10	x10
Internal resistance ⁽³⁾	2 kΩ	20 kΩ	63.2 kΩ	200 kΩ	632 kΩ	2 MΩ	6.32 MΩ	6.32 MΩ
Accuracy ⁽⁴⁾	1.5 %							
Permitted overload	420 V				1000 V ⁽⁵⁾		1500 V ⁽⁵⁾	

(1) Common to the 50 μA  range


(2) Direct reading in mV 

(3) Specific R: 20 kΩ/V, except range 1000 V - R = 6.32 kΩ/V

(4) In % of the end of scale

(5) For 15 seconds

AC VOLTAGES

V 	10 V	30 V	100 V	300 V	1000 V
Scale	100	30	100	30	100
Reading coefficient	x0.01	x1	x1	x10	x10
Internal resistance ⁽¹⁾	63.2 kΩ	200 kΩ	632 kΩ	2 MΩ	6.32 MΩ
Accuracy ⁽²⁾	2.5 %			2 %	
Bandwidth ⁽³⁾	10 Hz ... 100 kHz	10 Hz ... 50 kHz	10 Hz ... 25 kHz	10 Hz ... 1 kHz	
Permitted overload	420 V		1000 V ⁽⁴⁾		1500 V ⁽⁴⁾

(1) Specific R: 6.32 kΩ/V


(2) In % of the end of scale







(3) See § 4

(4) For 15 seconds


Presence of direct component give false measurement.


DECIBELS

- **Reminder:** The measurement of an AC voltage can be expressed in decibels (symbol dB). The decibel is the ratio of two quantities or level. Level N, in dB, of a voltage U has the mathematical expression: $N(\text{dB}) = 20 \log_{10}(U/U_0)$ U_0 is the reference voltage of 0.775 V  for a power P_0 of 1 MW on a load of 600 Ω.


- **Use:** Zero level of the red scale in dB corresponds to $U_0 = 0.775 \text{ V}$ for the 10 V  range. The reading is direct in dB for the 10 V  range from 0 to +22 dB. For the other ranges, it is possible to read in dB (near value) by adding respectively:
- +10 dB on the 30 V  range
 - +20 dB on the 100 V  range
 - +30 dB on the 300 V  range
 - +40 dB on the 1000 V  range

DC AND AC CURRENTS



 Always switch off the circuit. If the «Fus» light comes on, change the faulty fuse(s) (Reminder: minimum voltage of 110 V).


 Connect the leads to the multimeter and connect in series to the circuit with:


- the red lead in the « μmA » terminal, up to 1.5 mA
- the red lead in the «15 A» terminal, from 1.5 A to 15 A

 Switch off the power supply to the circuit before changing range.

- To get the current in μA , mA or A, multiply the value read on the appropriate scale by the reading coefficient shown in the table.

A 	50 μA ⁽¹⁾	150 μA	1.5 mA	15 mA	150 mA	1.5 A	15 A 
Scale	100	15 black					
Reading coefficient	x0.5	x10	x0.1	x1	x10	x0.1	x1
Voltage drop at the terminals ⁽²⁾	< 0.1 V		< 0.25 V		< 0.3 V	< 0.8 V	
Accuracy ⁽³⁾	2.5 %						5 %
Protection	Fuse 1.6 A HPC						Fuse 16 A HPC



 Limitation 10 min. ON, 5 min. OFF up to +40°C max.

(1) Common to the 100 mV  range.

(2) Without the leads. Resistance of the pair of leads supplied: approx. 70 m Ω .

(3) In % of the end of scale.

 Do not use the A  input on unprotected current transformers.

A 	1.5 mA	15 mA	150 mA	1.5 A	15 A 
Scale	15 red				
Reading coefficient	x0.1	x1	x10	x0.1	x1
Voltage drop at the terminals ⁽²⁾	< 0.8 V			< 0.9 V	< 0.8 V
Accuracy ⁽³⁾	5 %				3 %
Protection	Fuse 1.6 A HPC				Fuse 16 A HPC

 Limitation 10 min. ON, 5 min. OFF up to +40°C max.

(1) Bandwidth: 40 Hz to 5 kHz. See § 4.



(2) Without the leads. Resistance of the pair of leads supplied: approx. 70 m Ω .

(3) In % of the end of scale.

Presence of direct component give false measurement.


RESISTANCES



If the «Voltest» light comes on, unplug the leads immediately. Present voltage is upper to 15 V  or .


- To get the resistance in Ω , multiply the reading on the Ω scale (green) by coefficient of the selected range: x1 or x100. The zero adjusting is automatic. To keep the battery autonomy, avoid to untouch the rotary switch on the ranges.

Ω	x1 ⁽¹⁾	x100
Measurement extent	5 Ω to 10 k Ω	500 Ω to 1 M Ω
Internal resistance	140 Ω	14 k Ω
End of scale current	10 mA	150 μ A
Open circuit voltage	-1.5 V	
Accuracy ⁽³⁾	10 %	
Permitted overload	420 V	


1) Common to the continuity sound test .

(2) In % at mid-scale

CONTINUITY SOUND TEST

- Connection and specifications: idem Resistances
- Place the selector switch on the  x1 function
- Continuous audible beep emitted for a resistance $R < 80 \Omega$

BATTERY CHECKING

- Put the rotary switch on the function  x1 green.
- Short-circuit the leads, the needle must be positioned on the 0 (green square) of Ω green scale. In the contrary, change the battery.

4. INFLUENCES

Additional uncertainty at the § 2 and § 3 uncertainty given.

TEMPERATURE

1 %/10°C for all the ranges except 2 %/10°C for 0.1 V DC and 2.5 %/10°C for AC current ranges.

10 %/10°C in Ω .

FREQUENCY

Voltage ranges

- In the bandwidth 45 Hz to 500 Hz : 0 %, except 1000 V range: 0.5 %
- Outside the bandwidth 45 to 500 Hz and in the limits of § 3 bandwidth: 1.5 %, except 10 V range: 4 %

Current ranges

- In the limit of § 3 bandwidth: 1.5 %

5. GENERAL SPECIFICATIONS

Dimensions and weight

- 56 x 105 x 160 mm
- 500 g

Power supply


- One battery 9 V (type 6F22 or 6LF22 alkaline)
- Battery life:
 - 10,000 measurements of 15 seconds with alkaline battery for $R > 50 \Omega$
 - 4 000 measurements of 5 seconds for $R < 50 \Omega$ (with beep)

Environmental conditions

- Temperature: use: -10°C to $+55^{\circ}\text{C}$
storage: -40°C to $+70^{\circ}\text{C}$
- Relative humidity: use: $\leq 90\%$ HR
storage: $\leq 95\%$ HR
- Altitude: use: $< 2\,000\text{ m}$

Conformity with international standards

Electrical safety (EN 61010-1)

- Double insulation: 
- Installation category: III
- Degree of pollution: 2
- Rated voltage: 600 V

Electromagnetic compatibility: conforms to CE

- Emission and immunity (EN 61326-1)

Mechanical protection

- Degree of watertightness (EN 60529-1): protection index IP 53

6. TO ORDER

Use the designations and references below.

CA 5003

Supplied with a pair of leads with prods, 1 battery 9 V and this User's manual.

Accessories and spares

- Shoulder bag (240 x 230 x 70 mm)
- Carrying holster (220 x 180 x 75 mm)
- Pair of leads with test probes
- Set of 10 fuses 1.6 A HPC (6.3 x 32 mm)
- Set of 10 fuses 16 A HPC (10 x 38 mm)

Different measurement accessories widen the field of application or confer new functions on your multimeter.

Documentation on request.

NB: Always use accessories suited to the voltage and the overvoltage category of the circuit to measure (to NF EN 61010).


7. WARRANTY

Our warranty is applicable for **three years** for the multimeter and one year for accessories after the date on which the equipment is made available (extract from our General Conditions of Sale, available on request).

8. MAINTENANCE

 For maintenance, use only specified spare parts. The manufacturer will not be held responsible for any accident occurring following a repair done other than by its After Sales Service or approved repairers.

8.1. REPLACING THE BATTERY AND THE FUSES

 For your safety, the leads must be disconnected from the multimeter before the battery cover is opened.

- To open the cover, turn the screw 1/4 turn, anti-clockwise, using a coin or a screwdriver.
- Replace the dead battery by one 9 V battery (type 6F22 or 6LF22).
- Replace the faulty fuses respecting their value and their type:
 - Fuse 1.6 A HPC (6,3 x 32 mm - 500 V - 10 kA)
 - Fuse 16 A HPC (10 x 38 mm - 600 V - 10 kA)
- Refit the cover before using the multimeter.

8.2. STORAGE

If the multimeter is not put into service for a time exceeding 60 days, remove the batteries and store them separately.

8.3. CLEANING

- The multimeter must be disconnected from any electrical source.
- To clean the case, use a cloth slightly moistened with soapy water. Rinse with a damp cloth. Then, dry rapidly with a cloth or in a hot air stream.